

*The Elements of the Orbit of Comet a, 1883 (Brooks-Swift).*  
By Robert Bryant.

The following observations of this comet were made

	App. R.A.	App. $\delta$
	<sup>h</sup> <sup>m</sup> <sup>s</sup>	
1883, Mar. 3.29997 G.M.T.	0 12 23.663	+ 32° 0' 47".27

at Cambridge, England; and

	App. R.A.	App. $\delta$
	<sup>h</sup> <sup>m</sup> <sup>s</sup>	
Mar. 23 7 43 50 Paris M.T.	2 51 58.5	+ 25° 27' 33"
Apr. 12 8 27 36 Paris M.T.	4 19 24.2	+ 15° 56' 12"

at the Paris Observatory.

These observations were corrected for the effects of parallax and aberration by means of approximate elements previously determined; and then by the variation of curtate distances parabolic elements were determined. The following elements, referred to the mean equinox 1883, are those which gave the least residuals in the middle place.

$$\begin{aligned}
 T &= 1883, \text{ Feb. } 18.95224 \text{ G.M.T.} \\
 \pi - \varpi &= 110^\circ 56' 29''.2 \\
 \varpi &= 278^\circ 5' 59''.5 \\
 i &= 78^\circ 5' 37''.7 \\
 \log. q &= 9.8809143. \quad \text{Motion direct.}
 \end{aligned}$$

These elements give for the errors of the middle place  
(Observation — Computation)

$$\Delta\alpha \cos \beta = +34''.1, \quad \Delta\beta = +74''.0.$$

where  $\alpha$  and  $\beta$  denote the geocentric longitude and latitude respectively.

The interval between the extreme observations is 40 days, and the arc of anomaly described  $51^\circ$ .

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*The Meteor Shower of Pons's Comet.* By W. F. Denning.

The meteoric radiant point of Pons's comet (1812) is at  $200^\circ + 68^\circ.5$  December 6+, and the theoretical meteor speed is 37 miles per second.\* The comet, however, in crossing the node, is some 20 millions of miles distant from the earth's orbit on the in-

\* British Association Report on Luminous Meteors, 1875, p. 234. The radiant point computed from MM. Schulhof and Bossert's orbit (1884) is at  $197^\circ.8 + 67^\circ.3$  (*Nature*, Jan. 17, p. 273).

terior side, so that the possibility of a rencontre with any meteoric fragments belonging to it is very questionable.

In 1876, at the end of November and early part of December, I discovered a feeble star-shower proceeding from a point  $6^{\circ}$  N. of  $\alpha$  *Draconis*. I recorded 5 of these meteors on the evening of December 8. The radiant point was at  $208^{\circ} + 71^{\circ}$  (*Monthly Notices*, vol. xxxvii. p. 111, Radiant No. 44). The correspondence of this shower both in date and position with the cometary radiant as above is very close, but the display, as I observed it, merely represented one of those attenuated streams which abound in every region of the heavens. The individual meteors were slow-moving, star-like bodies, devoid of streaks or trains, whereas the meteors of Pons's comet should have a velocity very nearly as great as the Perseids. It is extremely doubtful, therefore, whether this shower of Draconids, seen in 1876, can have any physical relation with the comet of Pons; though the accordance may be worth mentioning. The number of known meteoric systems encountered by the Earth is now so great that agreements of this kind carry little weight with them unless they are of a very marked and significant character.

During the last few years I have made no observations at the particular epoch of these Draconids, but on December 8, 1883, I casually saw a bright, white meteor in the fore part of *Ursa Major*, which, from its foreshortened track, obviously belonged to this radiant N. of  $\alpha$  *Draconis*.

Bristol: 1884, Jan. 2.

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*Spectroscopic Results for the Motions of Stars in the Line of Sight obtained at the Royal Observatory, Greenwich, in the year 1883. No. VII.*

(Communicated by the Astronomer Royal.)

The results here given are in continuation of those printed in the *Monthly Notices*, vol. xxxvi. p. 318, vol. xxxvii. p. 22, vol. xxxviii. p. 493, vol. xli. p. 109, vol. xlii. p. 230, and vol. xliii. p. 81. The observations were made with the "half-prism" spectroscope, one "half-prism" with a dispersion of about  $18\frac{1}{2}^{\circ}$  from A to H being used, except in a few cases of bright stars, mentioned in the remarks, where a train of two "half-prisms" with a dispersion of  $80^{\circ}$  from A to H was used. An eyepiece with a magnifying power of 14 was employed throughout.

The cylindrical lens has always been used in front of the slit as in the observations made previously to 1881. A slip of metal coated with Balmain's luminous paint inserted immediately behind the measuring pointer has been frequently employed to give a phosphorescent illumination of the field.

The observations of the Moon and of the sky spectrum have been made as a check on the general accuracy of the results.